System z in the Mobile World

Dave Jeffries

Application and Integration Middleware Director of CICS Portfolio, IBM Software Group

Mobile Adoption continues to explode…

With 7 Billion people on the planet…

- 3.5 billion people use toothbrushes
- 4.5 billion people with access to a working toilet
- **? billion mobile devices**

Mobile is becoming THE primary platform

- 33% government web site visits
- 20% of online financial transactions
- 81% of adults use personal devices for business
- 91% of adults of smartphone within reach 100% of the time


You know? you can do this with your mobile device now.

Mobile app development is a top enterprise priority

35% of developers are currently targeting tablets, with more than **90%** plan to develop for tablets in the near future.

29% of mobile developers currently focus on Hybrid app development with another 49% expected to focus on it in the next year.

Nearly 90% of developers are currently extending enterprise apps to mobile or plan to in the near future.

In the next 12 months **77%** of developers will be focused on Hybrid application development.

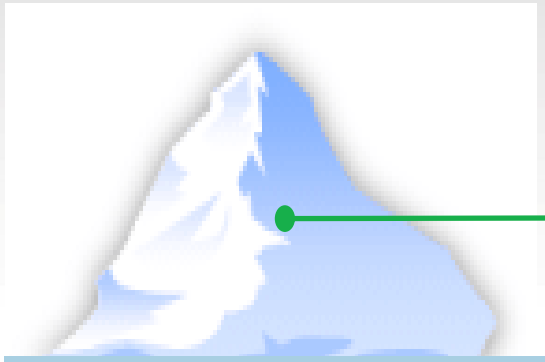
More than **200M** people upgraded to iOS7 in the first week (September, 2013)

Almost all expect to deploy more than **25** mobility applications in the next two years

Source: Evans Data Mobile Developer Survey Mobile Development Report 2012 Volume
Source: Business Insider (September 2012)

Fancy Apps Don't Equal Business Value

Creating a truly engaging Mobile experience involves far more than building great Mobile apps



Building Mobile apps that support a range of devices, are easy to use and look really cool

Increasing speed to market to deploy capabilities

Rapidly innovating to keep enhancing experience

Protecting Mobile access to enterprise data

Scaling elastically to deliver responsiveness

Integrating Mobile activities with rest of business

Mobile workloads impact System z differently than web workloads… do you know your impact?

- Increased z/OS transactions. Increase in off-peak transactions. Expect 10-50% growth as you add a mobile channel.
- Increased query or “read-only” transactions. As many as 50% of mobile transaction could be “read-only”.
- Unanticipated spikes in workload due to popular apps, features. No traditional times for workload spikes.

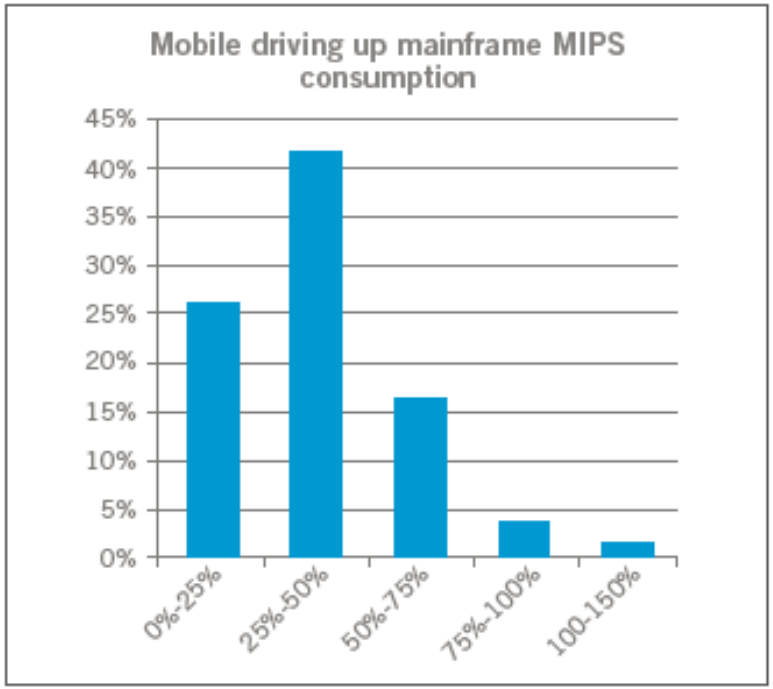
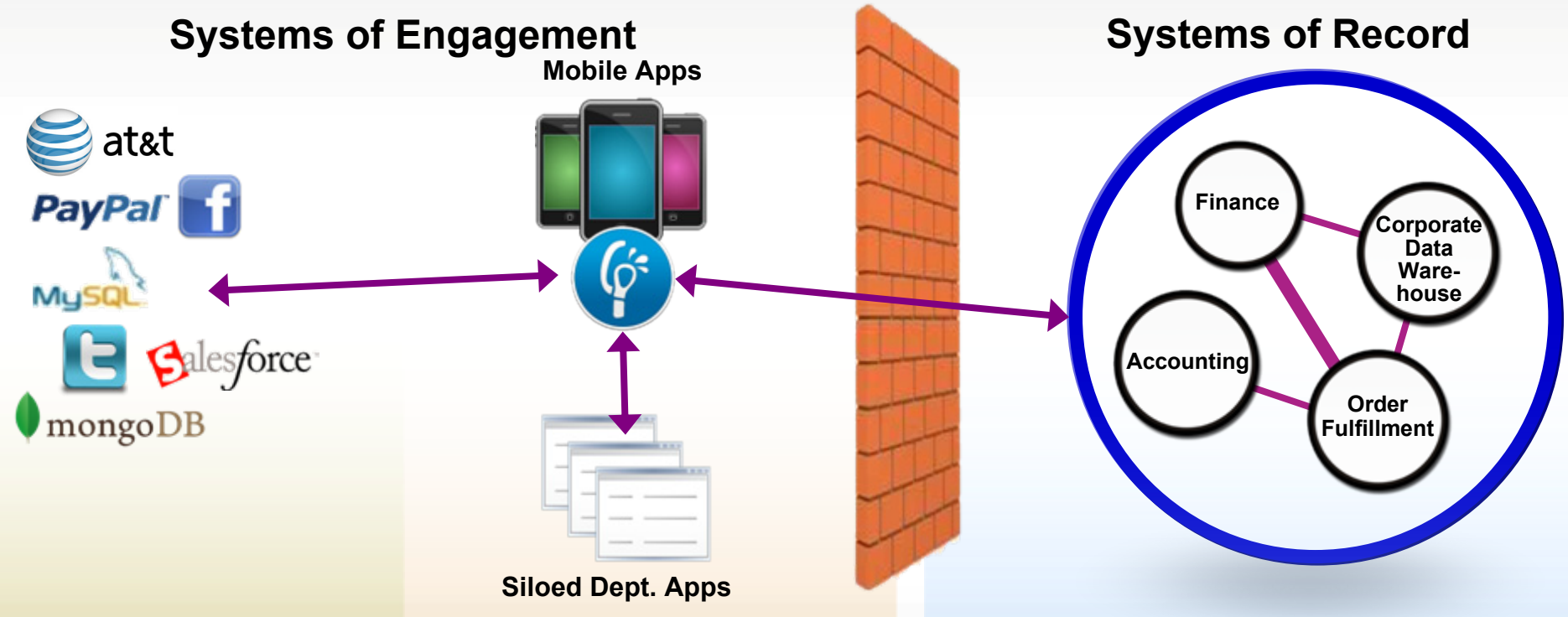


Chart 7: The increased use of mobile applications has increased MIPS consumption by more than two-fifths (41 percent), with 2 percent saying it has more than doubled.

- Inefficient applications written by “non-professional” coders. Drives up z/OS transaction rates.

System z bridges Systems of Record and Systems of Engagement



Enterprises face unique mobile application challenges

Fragmentation and developing for multiple mobile platforms

- Highly fragmented set of devices, platforms, languages, and tools complicates development, test, and operations

Accelerated time to market requirements

- Accelerated development demands instant provisioning of development servers.
- Spikey mobile traffic demands highly scalable cloud-based infrastructures, for both SoE and SoR.

Connecting apps with existing enterprise systems

- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable, and remain secure.
- Enterprise systems must be able to instantly provision new services and environments.

…and Unique z Requirements

- Development tools that seamlessly integrate z data and trans.

- Mobile tools supported in Cloud-based development and production environments.

- Easy access to z data and trans.
- End-to-end transactional security
- Low incremental MIPS cost.

System z addresses Enterprise mobile development and delivery challenges

Fragmentation and developing for multiple mobile platforms

- Highly fragmented set of devices, platforms, languages, and tools complicates development, test, and operations

Accelerated time to market requirements

- Accelerated development demands instant provisioning of development servers.
- Spikey mobile traffic demands highly scalable cloud-based infrastructures, for both SoE and SoR.

Connecting apps with existing enterprise systems

- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable, and remain secure.
- Enterprise systems must be able to instantly provision new services and environments.

IBM Worklight Studio and RDz

- Seamless integration with z data and transactions.
- Device runtime provides mobile device independence.

System z Scalability

- System z Linux enables rapid provisioning of Worklight servers.
- z/OS is highly and easily scalable to handle workload increases.

z/OS is mobile enabled

- z/OS subsystems are mobile-ready, with z/OS Connect feature embedded within WAS, IMS and CICS.
- End to end mobile security.
- High-performance access from Linux on System z

The IBM mobile Application Development lifecycle

Design & Develop
Worklight &
Rational Developer for z

Instrument
Tealeaf (User Experience)
Security (Fiberlink, Trusteer)

Obtain Insight
Tealeaf

Integrate
z/OS Connect,
Worklight, MQ/MQTT,
IIB, DataPower

Manage
Worklight &
Fiberlink

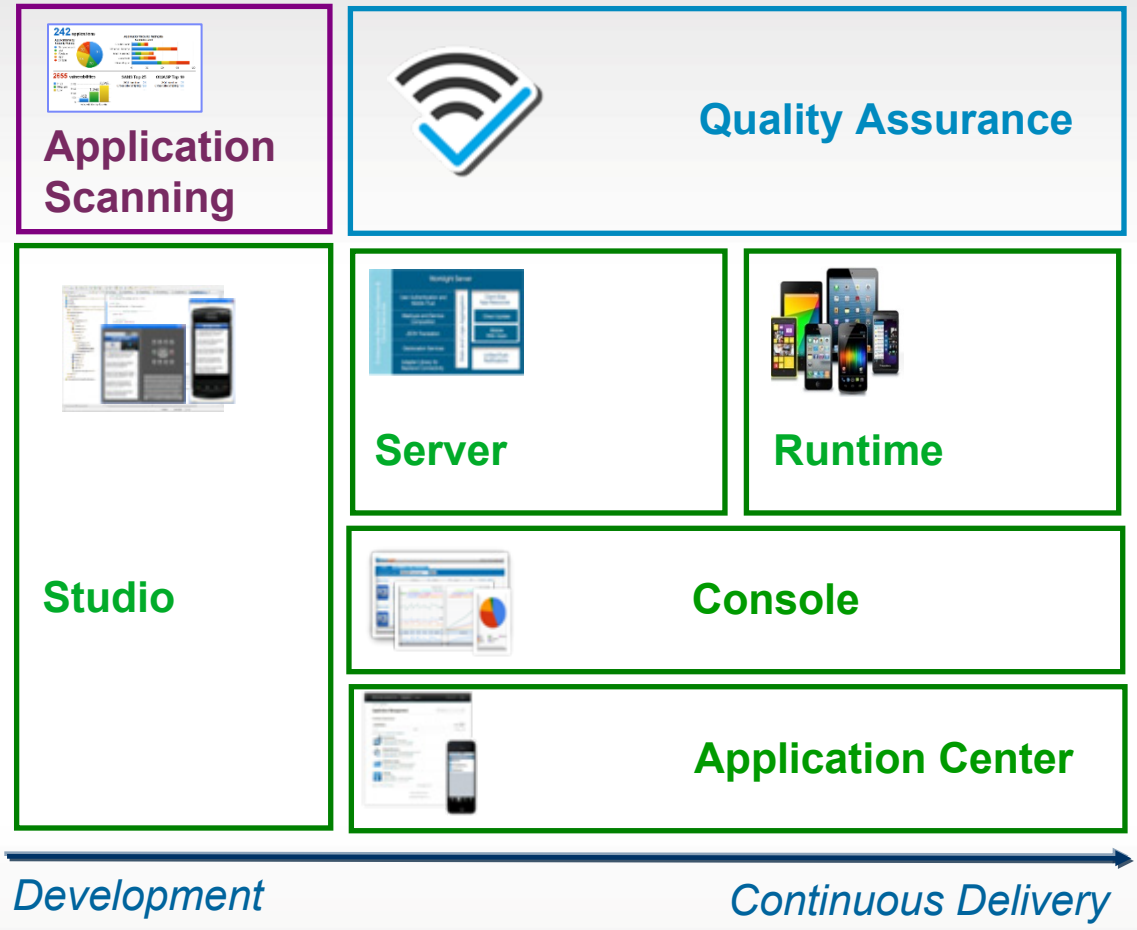
Test
Rational Test Workbench
Mobile Quality Assurance

Deploy
Worklight & UrbanCode

Scan & Certify
AppScan

Run on z

IBM Worklight integrates all aspects of the mobile application lifecycle

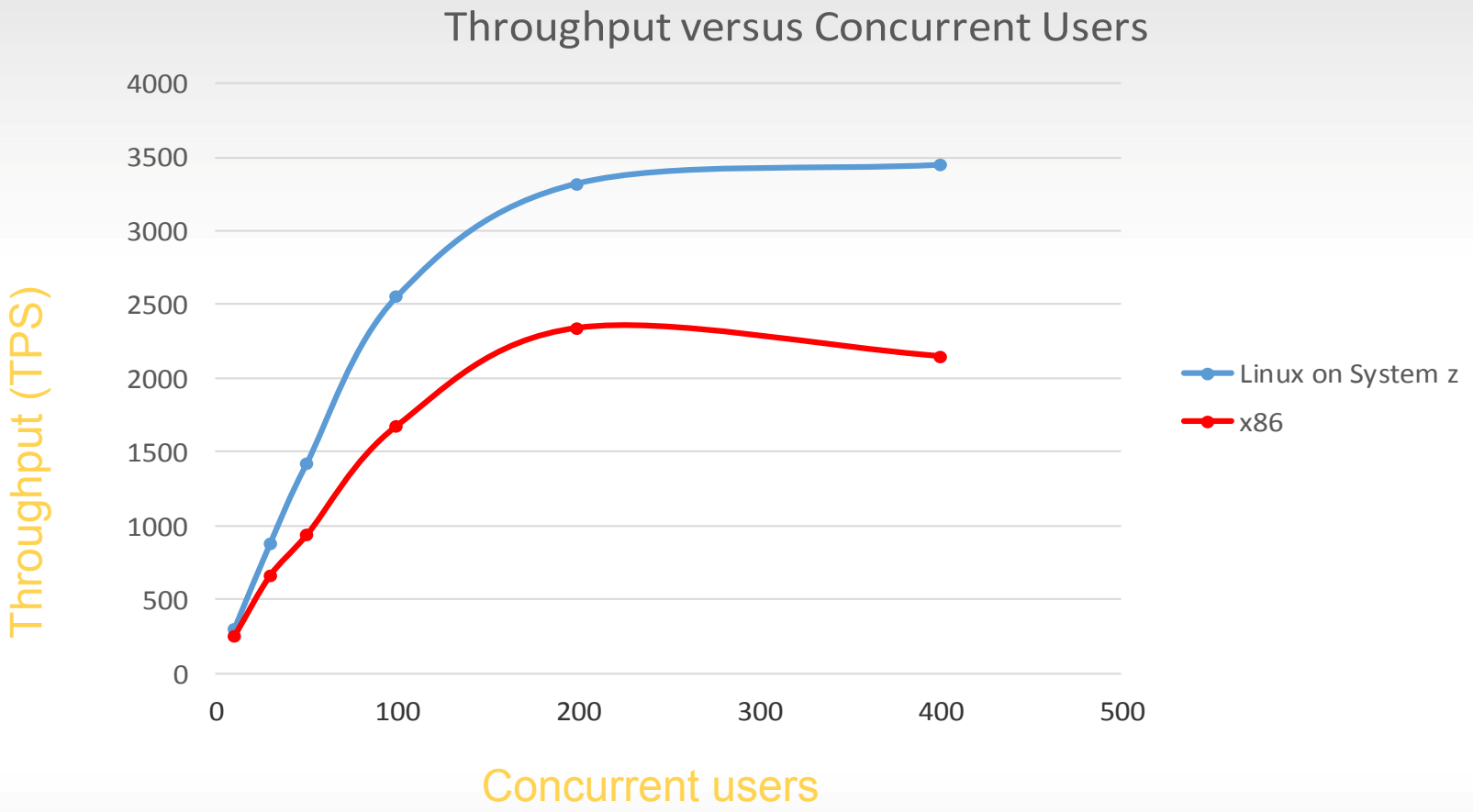


Application Scanning
Detect code vulnerabilities at the time of development

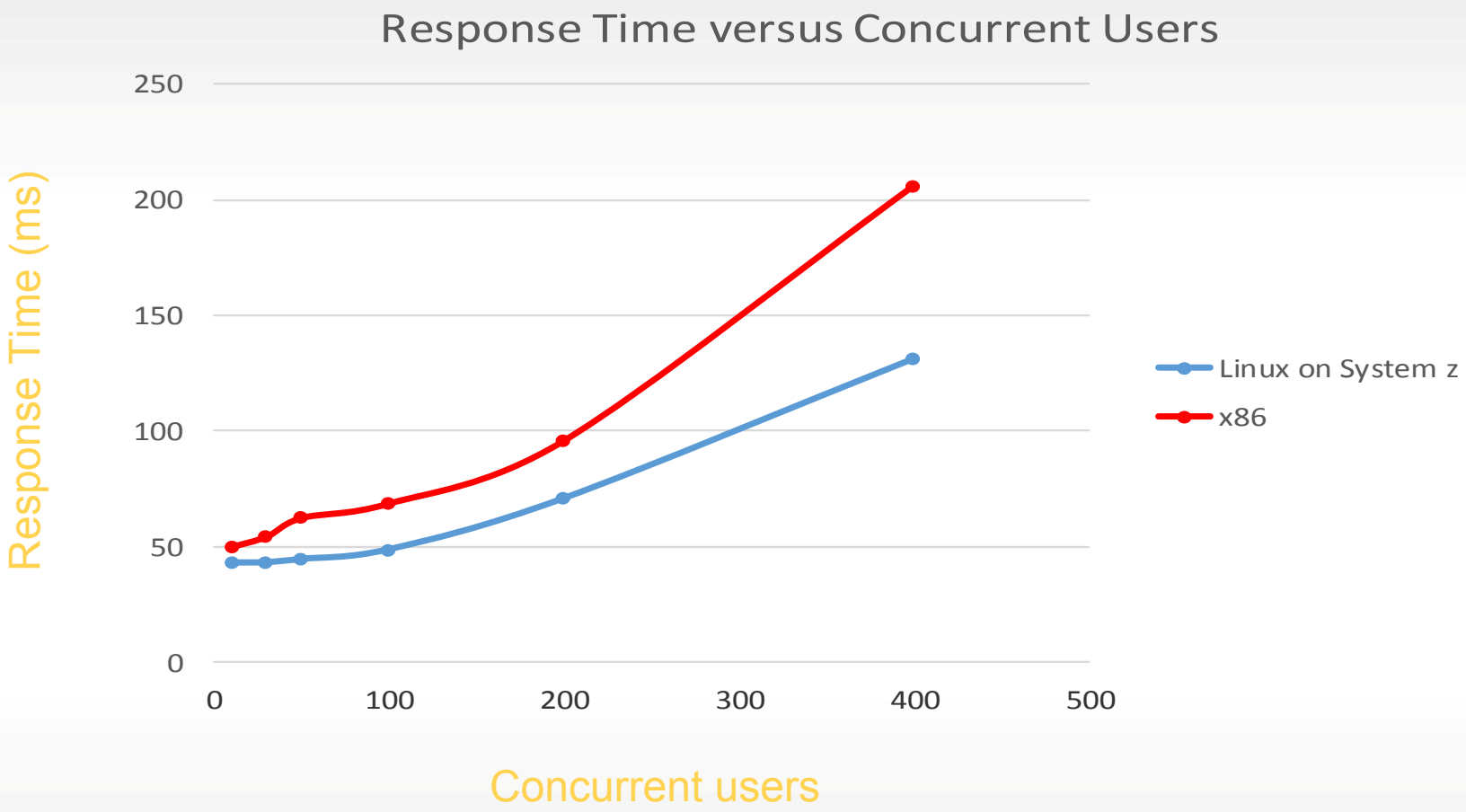
Quality Assurance
Collect beta test feedback, crashes and analyze user sentiment

Foundation
Development, Runtime, Operations Console & Private Store

Worklight scales better on Linux on System z than x86



Worklight provides lower Response Time on Linux on System z than x86



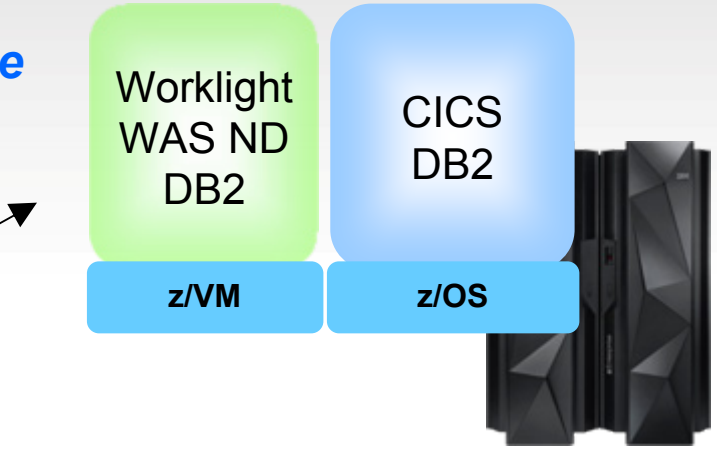
Co-locating Worklight with System of Record increases throughput by 61%, reduces response time by 36% and TCA by 10%

Which platform provides the lowest TCA over 3 years?

Mobile Users

- **400 concurrent users**
- **60% Login, 30% Add or Delete,10% Update**

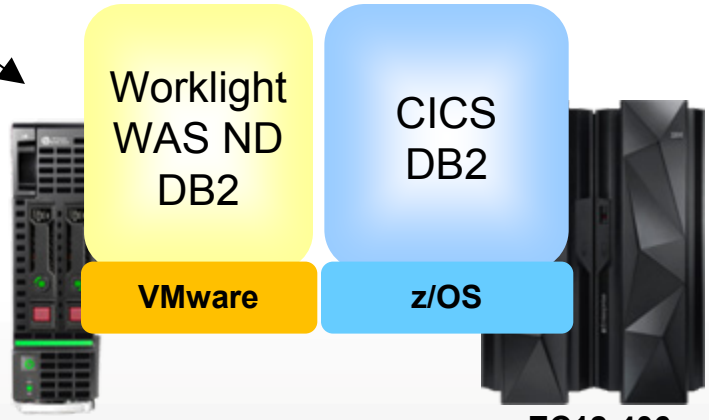
Mobile Insurance workload using Mobile Workload Pricing



zEC12-410 + 6 IFLs

3,446 TPS
131.4ms RT
$2,355 per TPS
(3 yr. TCA*)
Prod + Dev/QA + DR

10%
lower cost



HP ProLiant BL460c
Intel E5-2697v2 2.7GHz 6co

zEC12-406

2,145 TPS
205.4ms RT
$2,631 per TPS
(3 yr. TCA*)
Prod + Dev/QA + DR

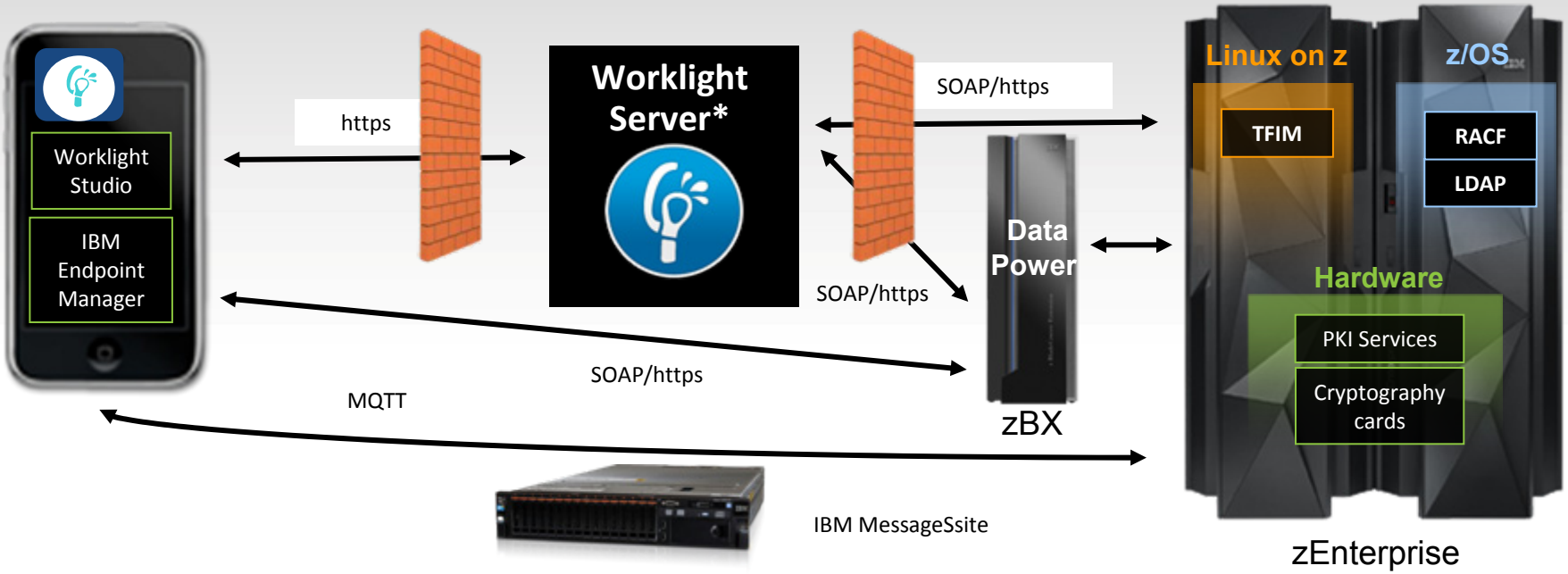
* 3-Year TCA includes list prices for Hardware and Software total cost for front and back end incorporating Mobile Workload Pricing for zOS components. Sizing shown is for Production to which 30% is added for System z for Dev/QA and CBU pricing for DR and 2x for Distributed

IBM WebSphere Liberty z/OS Connect for Secure and Consistent Enterprise Connectivity for Mobile

FREE feature that ships with WAS, CICS, and IMS. Runs in z/OS only.

- **Built for z/OS** – Builds on z/OS qualities of service - security, auditing, chargeback.
- **Unifies connectors** – A common solution for mobile, cloud, and web
- **Simplified integration** – Hide complexity of connecting to z/OS using REST
- **API Management** – Mobile developers can discover the transactions you choose.

End to end security from mobile to the mainframe



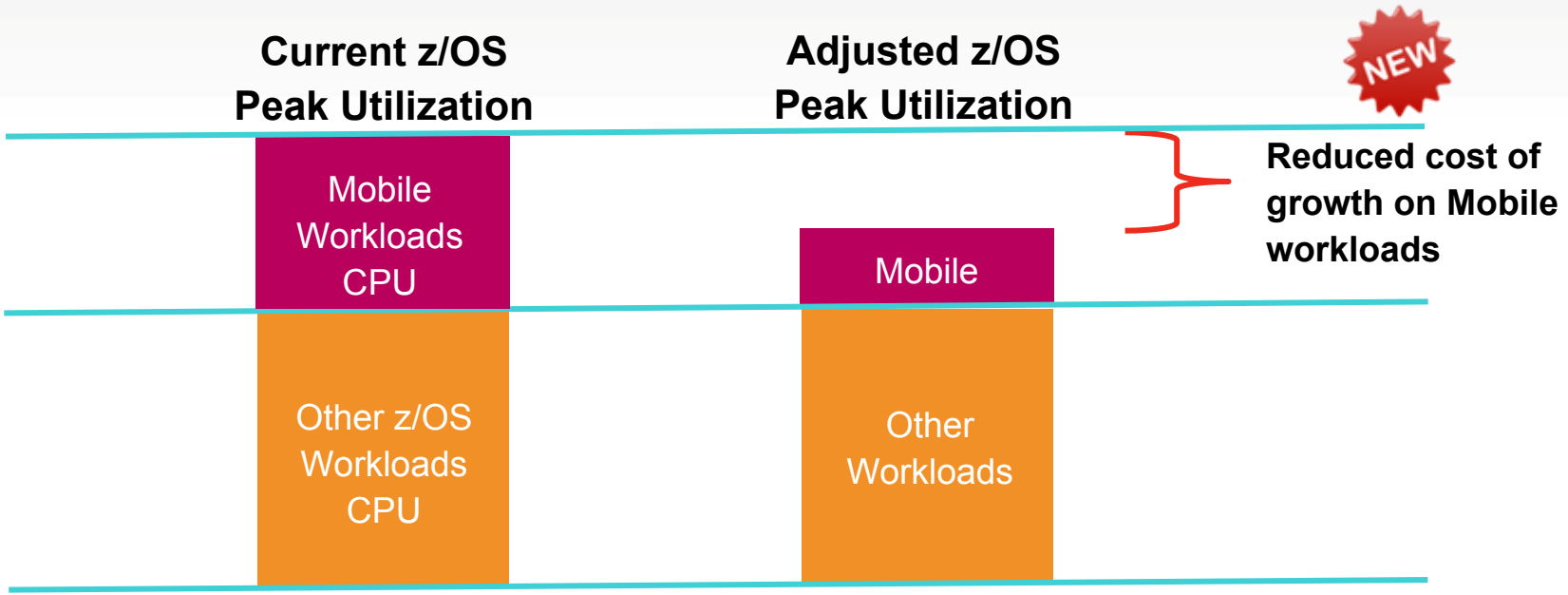
- **End to end capability of mobile users identity permits, syncing of LDAP, auditing of transactions, and simplified identity mapping** with RACF®
- **Advanced scalability of encryption processing** with System z cryptography cards
- **Centralized certificate management** with z/OS PKI services
- **Secured integration gateway for System z services, centralized key management and mobile access policy capabilities** with DataPower
- **High level security to backend applications** via HiperSockets or IEDN support with Worklight Server

**Worklight Server can also reside on Linux on z*

Client Example

New System z Mobile pricing enables IT investments to scale with the growth & business returns of mobile

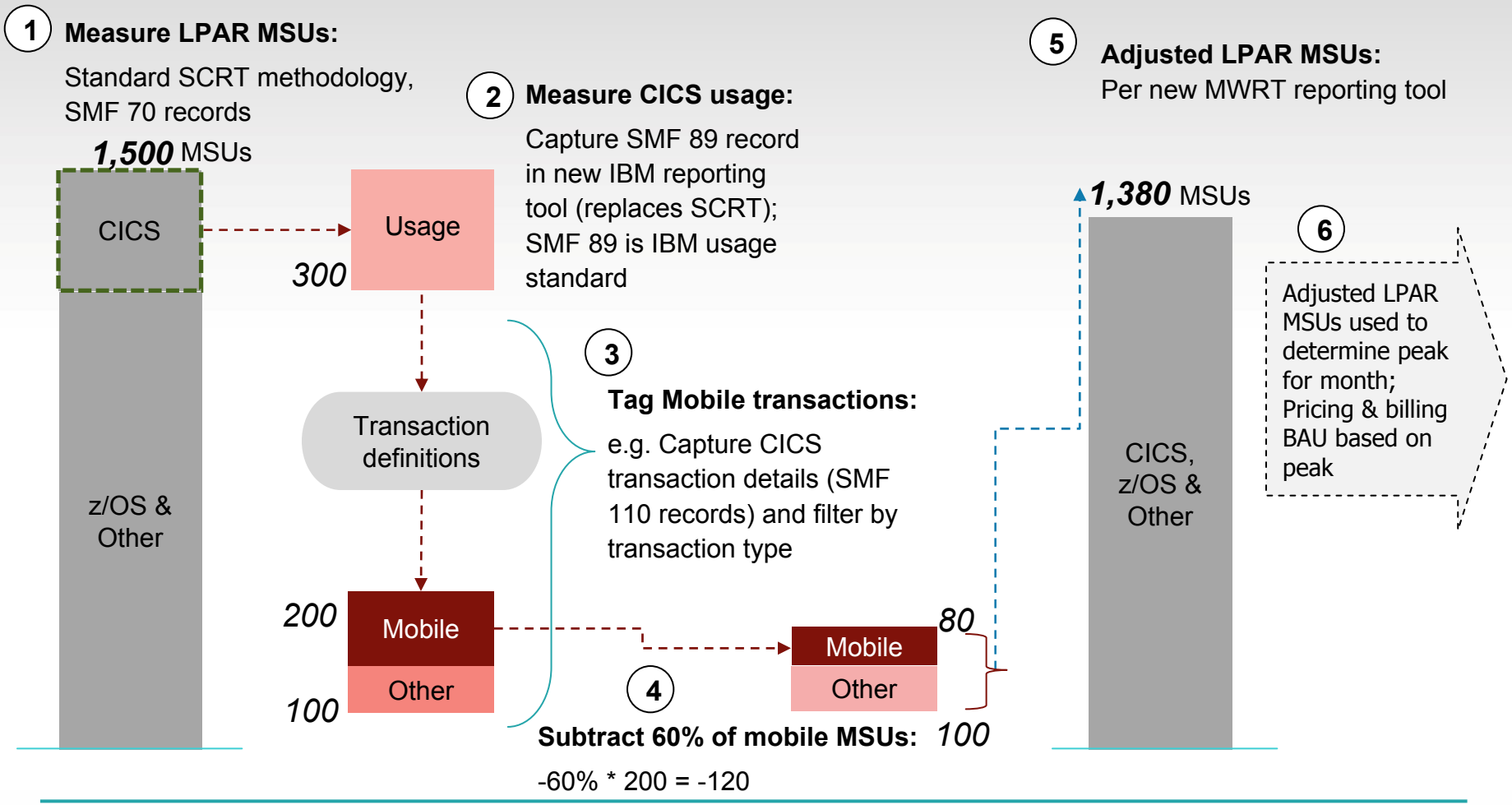
- Reduce z/OS peak MSUs attributable to mobile workloads -- up to 60%
- No Infrastructure Changes Required… (such as separate LPARs)



- Customers must tag and track z/OS CPU seconds from mobile workloads.
- New MWRT tool replaces SCRT and will subtract mobile CPU seconds from peaks.
- Announcement letter.

18

Example: Mitigating mobile impact to reported LPAR MSUs



LPAR MSUs (Standard)	
z/OS/Other	1,500
CICS	1,500

Figures are for illustrative purposes only.

LPAR MSUs (Adjusted)	
z/OS/Other	1,380
CICS	1,380

Detailed MWRT Reporting Example

5655-S97	CICS TS for z/OS V4					
Processor Type Serial	2817-XXXX					
Date Time of Interval	**LPAR Total MSUs**					Machine
	LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
02 Nov 2013 - 00:00 UTC	197	354	28	143	198	920
02 Nov 2013 - 01:00 UTC	205	329	27	131	180	872
02 Nov 2013 - 02:00 U						
02 Nov 2013 - 03:00 U						
02 Nov 2013 - 04:00 U						
02 Nov 2013 - 05:00 U						
02 Nov 2013 - 06:00 U						
02 Nov 2013 - 07:00 U						

1 **Capture LPAR MSUs** (SMF 70 records)

Mobile MSUs					Machine
LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
79	142	11	57	79	368
82	132	11	52	72	349
73					
54					
42					
38					
43					
49					

2 **Customer requirement – Provide Mobile MSUs by interval:** *Customer input* with IBM approval. Values provided monthly in CSV format.

Mobile MSU reduction					Machine
LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
(47)	(85)	(7)	(34)	(48)	(221)
(49)	(79)	(6)	(31)	(43)	(209)
(44)					
(33)					
(25)					
(23)					
(26)					
(30)					

3 **Tool will subtract 60% of Mobile MSUs from LPAR original values**

Adjusted LPAR Values for Billing					Machine
LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
150	269	21	109	150	699
156	250	21			
138	213	19			
103	162	16			
80	131	16			
73	140	17			
81	138	18			
93	139	18			

4 **Adjusted LPAR totals used to determine new monthly peak.**

LPAR1 Total MSUs = 197

Mobile only MSUs = 79

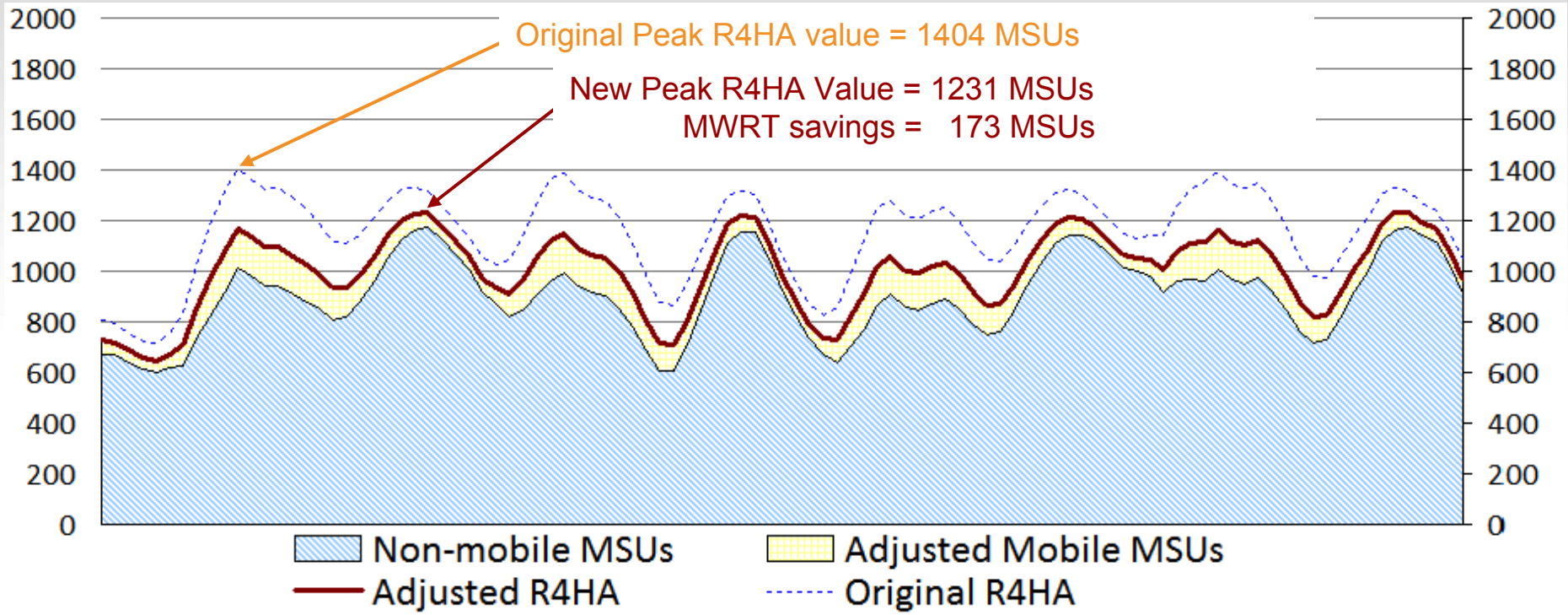
Subtract 60% of Mobile =

(79 * 0.60 = 47)

Adjusted LPAR MSUs:

197 – 47 = 150

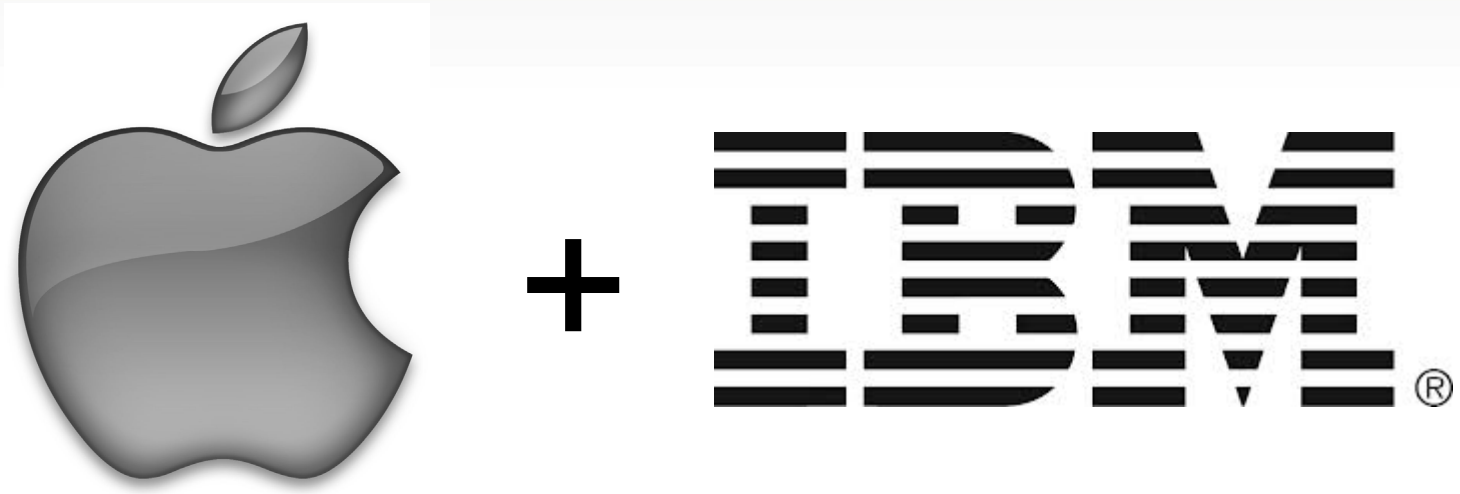
LPAR MSU values adjusted for mobile contribution



- MWRT removes 60% of the Mobile workload, interval-by-interval
  - Non-mobile workload is unchanged
  - Billing for the month is based upon the newly calculated R4HA curve after the mobile workload has been reduced

Provides benefit when Mobile workloads contribute to monthly peak MSUs; Off-peak MSU adjustments will not affect MSUs used for billing.

The IBM Apple Partnership

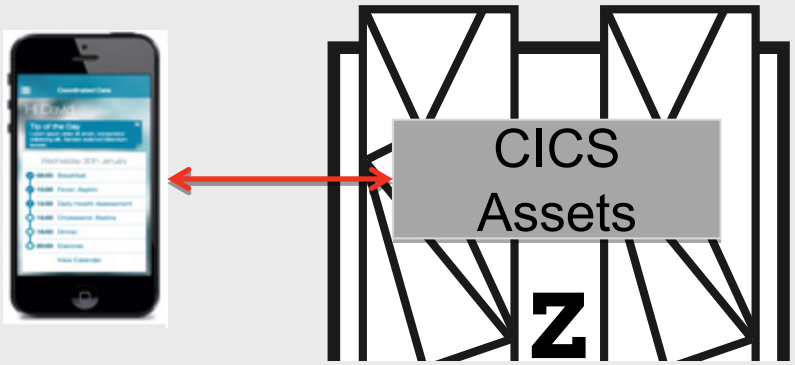


IBM MobileFirst Business Acceleration: CICS Integration speeds time to market

IBM Ready App: CICS Banking Accelerator

Beyond the reference framework, the CICS Banking Accelerator provides essential code and resources to simplify the integration of the mobile application with your existing mainframe banking solution

- ***Simplify integration with existing mainframe assets***
- ***Simplifies identification of mobile workload to qualify for Mobile Workload Pricing***



CICS Application Integration

1. CICS Best Practices
Recommended best practices for mobile workload (including mobile pricing data collection recommendation)

2. CICS Resource definitions
Pre-built resources for inclusion in your CICS systems to simplify installation and integration with existing apps

3. CICS Workshop
Advice and hands-on labs to help you rapidly exploit the IBM Ready Apps or other mobile apps

MOBILE MAINFRAME APP THROWDOWN

Will you be our mobile champ?

CICS | IMS | WAS | DB2

Open to existing System z clients

The challenge: Build a proof-of-concept demonstrating mobile enablement of your existing mainframe apps.

Get IBM help to build your mobile PoC

Call us 'Coach': We provide getting started guides and access to IBM zMobile Experts for questions and queries.

Win a week with IBM experts & more

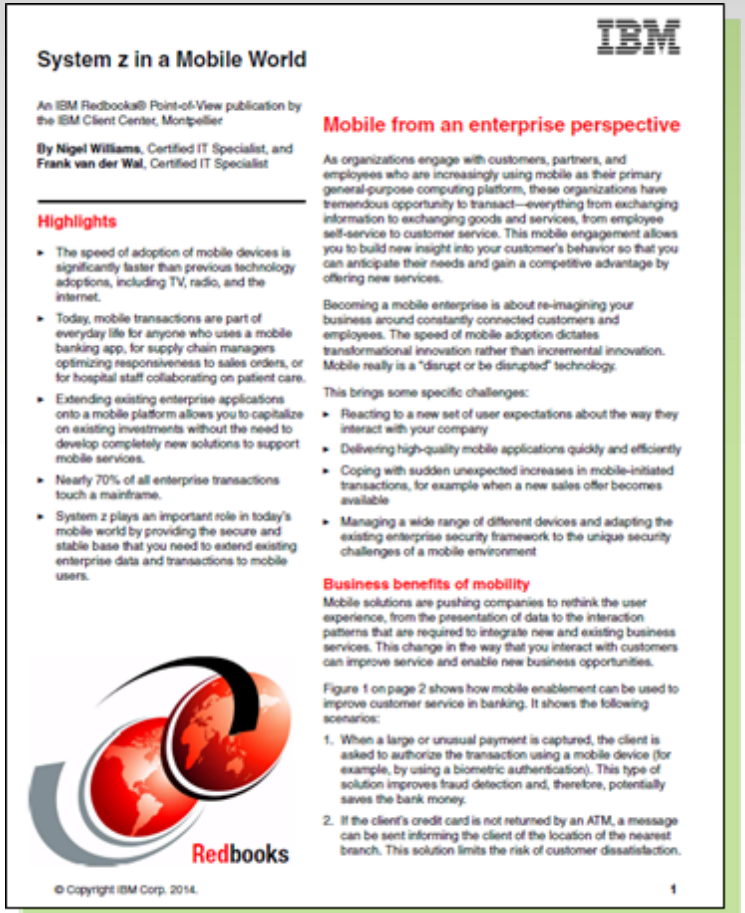
Make it real: Win help from IBM to bring your mobile app to life.

ibm.biz/mmathrowdown

No submission of code required, only screenshots.
Entries must be complete and submitted by **17 Sept 2014.**

Interested? Next steps…

- Read our Point-of-View paper.
- Request a Demo.
  - Banking, Retail, Government, Insurance
  - Use Worklight on Linux on System z
  - Use z/OS transactions.
- Try the System z Mobile demo apps
  - CICS Genapp.
  - CICS EGUI
  - IBM Remote. Sample App you can use to manage z HMC.
- System z Mobile home page
  - Customer case studies
  - Analyst reports
  - Customer Videos.



System z in a Mobile World

An IBM Redbooks® Point-of-View publication by the IBM Client Center, Montpellier

By Nigel Williams, Certified IT Specialist, and Frank van der Wal, Certified IT Specialist

Highlights

- The speed of adoption of mobile devices is significantly faster than previous technology adoptions, including TV, radio, and the internet.
- Today, mobile transactions are part of everyday life for anyone who uses a mobile banking app, for supply chain managers optimizing responsiveness to sales orders, or for hospital staff collaborating on patient care.
- Extending existing enterprise applications onto a mobile platform allows you to capitalize on existing investments without the need to develop completely new solutions to support mobile services.
- Nearly 70% of all enterprise transactions touch a mainframe.
- System z plays an important role in today's mobile world by providing the secure and stable base that you need to extend existing enterprise data and transactions to mobile users.

Mobile from an enterprise perspective

As organizations engage with customers, partners, and employees who are increasingly using mobile as their primary general-purpose computing platform, these organizations have tremendous opportunity to transact—everything from exchanging information to exchanging goods and services, from employee self-service to customer service. This mobile engagement allows you to build new insight into your customer's behavior so that you can anticipate their needs and gain a competitive advantage by offering new services.

Becoming a mobile enterprise is about re-imagining your business around constantly connected customers and employees. The speed of mobile adoption dictates transformational innovation rather than incremental innovation. Mobile really is a "disrupt or be disrupted" technology.

This brings some specific challenges:

- Reacting to a new set of user expectations about the way they interact with your company
- Delivering high-quality mobile applications quickly and efficiently
- Coping with sudden unexpected increases in mobile-initiated transactions, for example when a new sales offer becomes available
- Managing a wide range of different devices and adapting the existing enterprise security framework to the unique security challenges of a mobile environment

Business benefits of mobility

Mobile solutions are pushing companies to rethink the user experience, from the presentation of data to the interaction patterns that are required to integrate new and existing business services. This change in the way that you interact with customers can improve service and enable new business opportunities.

Figure 1 on page 2 shows how mobile enablement can be used to improve customer service in banking. It shows the following scenarios:

1. When a large or unusual payment is captured, the client is asked to authorize the transaction using a mobile device (for example, by using a biometric authentication). This type of solution improves fraud detection and, therefore, potentially saves the bank money.
2. If the client's credit card is not returned by an ATM, a message can be sent informing the client of the location of the nearest branch. This solution limits the risk of customer dissatisfaction.

Redbooks

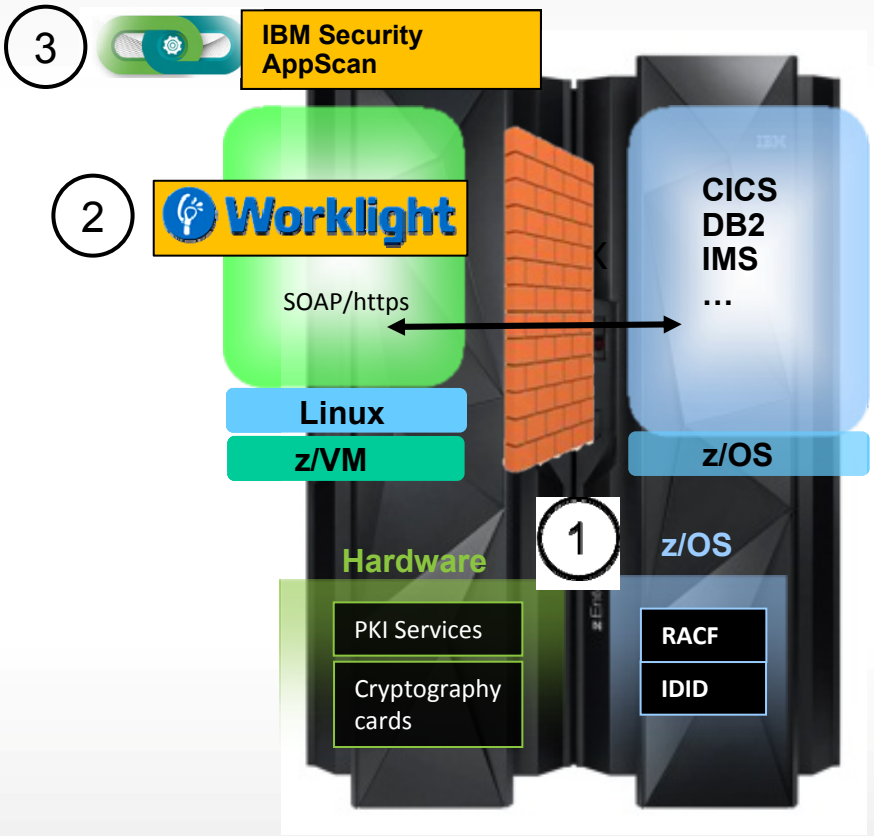
Connecting mobile & your enterprise

- ✓ Do you know what your overall enterprise mobile strategy is?
- ✓ Are you adapting your System z infrastructure to support mobile?
- ✓ Are you designing and developing applications to take advantage of your existing investments?


IBM

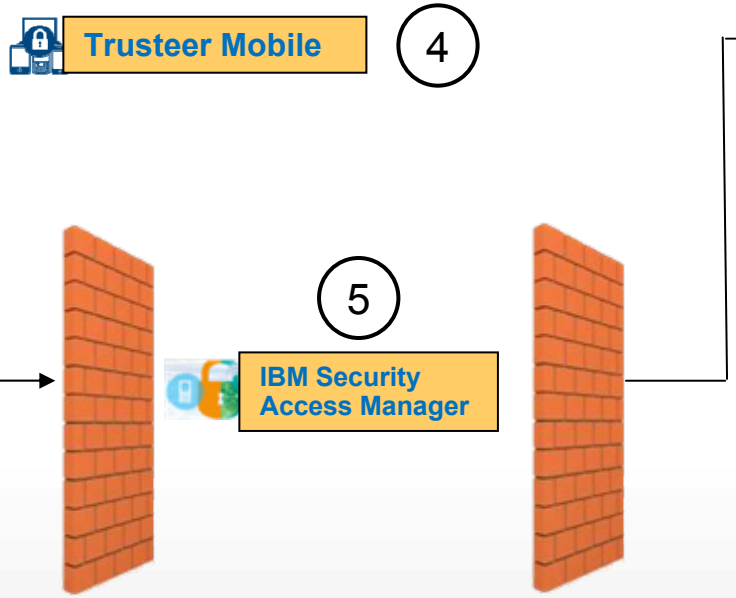
Building and Maintaining a Secure Enterprise Mobile Application

1. Start with the most secure operating system, applications and database
2. Build, deliver, deploy & maintain secure mobile applications
3. Identify and correct security vulnerabilities as the application is developed and maintained.



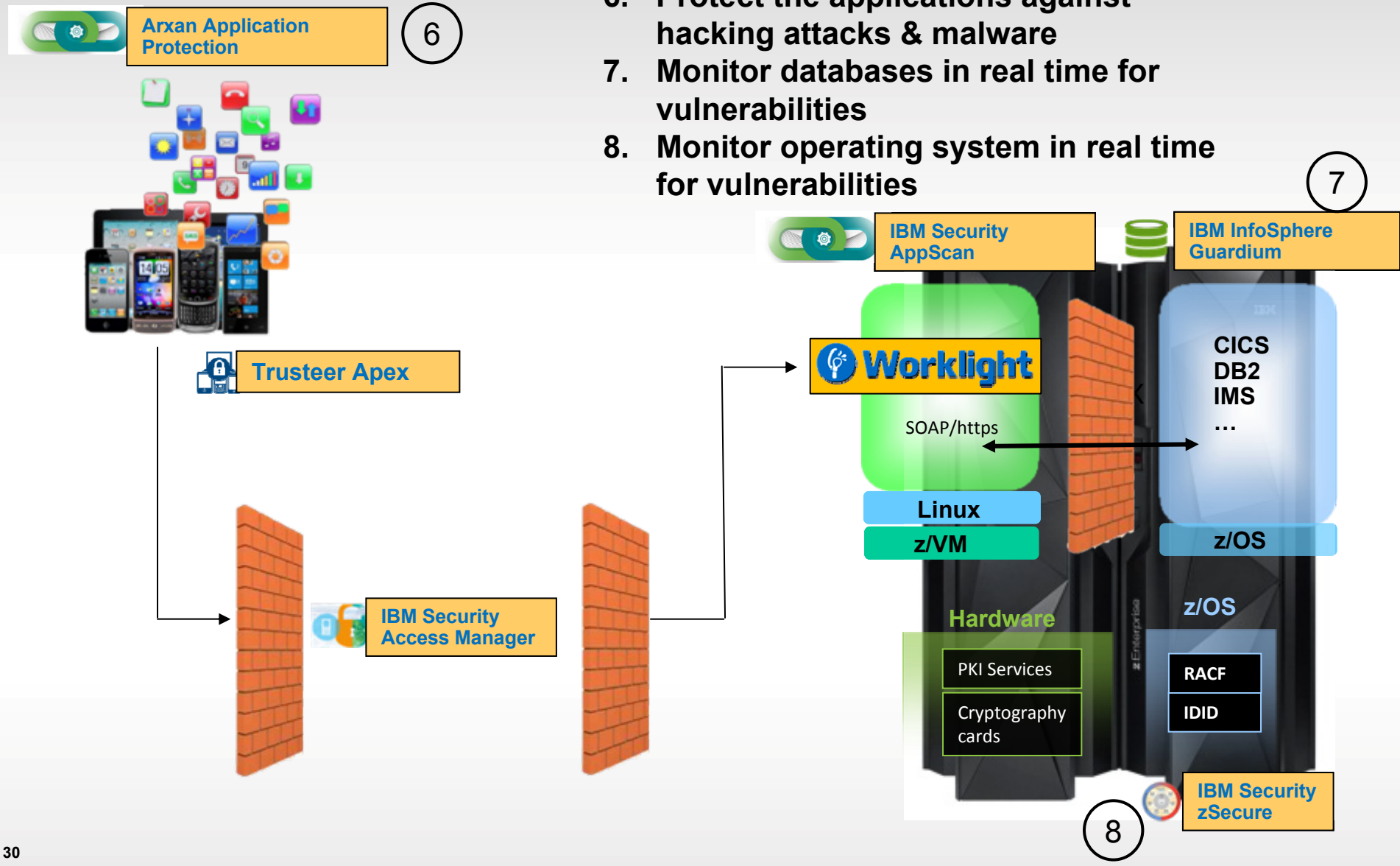
Secure the Users & Devices for the Mobile Enterprise

4. Secure the device
5. Authenticate and authorize the user



Secure the Mobile Enterprise Run Time Environment

6. Protect the applications against hacking attacks & malware
7. Monitor databases in real time for vulnerabilities
8. Monitor operating system in real time for vulnerabilities



Real-time security intelligence for the Mobile Enterprise